UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
NATIONAL VEHICLE AND FUEL EMISSIONS LABORATORY
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OFFICE OF
AIR AND RADIATION

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Subject: Semi-Automatic Transmissions and Driver Selectable Devices

Dear Manufacturer

This letter explains a recent interpretation of our policy on driver selectable devices contained in policy letter number CD-87-01, dated January 23, 1987.

Our basic multi-mode transmission policy explained in CD-87-01 remains in effect: "Barring substantial evidence that the vehicle will be driven predominately in one mode, we will test the vehicle in both modes (or the two extreme modes if more than two modes exist), and harmonically average the results for use in fuel economy calculation". The term "predominate" means "nearly total usage of a given selectable mode" such as the use of "Drive" versus "2" in an automatic transmission.

During the past several years, manufacturers have been producing semi-automatic transmissions which, in addition to normal automatic operation, could be shifted manually using a +/- toggle switch to move between the gears. Each of these designs had somewhat different characteristics; however, until recently, EPA had determined that there was no "predominately" used mode for any of these transmissions. Consequently vehicles were tested both in both the automatic and manual modes for fuel economy and emission purposes.

Recently we reviewed the "touch shift" transmission by Mercedes and determined that this transmission would be used predominately in the automatic mode in use. Consequently, emission and fuel economy testing was performed only in the automatic mode. Based on our review of the design and our drive evaluation we determined that the touch shift transmission employed certain features which significantly encouraged the use of the automatic mode to the point that we believe that the automatic transmission drive gear position will be almost always used in use. Those features are (1) that in the manual touch shift mode the +/- toggle switch enables a gear range rather than a specific gear and (2) that the +/- toggle function is located on the gear shift lever (rather than on the steering wheel, steering column, or the dashboard).

The "gear range" feature means that for a given gear selection (such as "3") the transmission may enter any gear from the lowest gear up to the selected gear based on the shift control logic of the transmission (generally the shift control logic is a function of engine load and rpm). If a lower gear was selected by the shift control logic, the transmission would upshift to the selected gear when conditions were correct. For example when gear "3" is selected, the transmission may enter gear 1,

2, or 3 based on the engine parameters at the time of the shift. If gear 1 or 2 was selected, the transmission would automatically shift up to "3" when the conditions were correct.

Manufacturers with similar transmissions (semi-automatic transmissions which use gear ranges and a +/- toggle function actuated by the gear shift lever) may conduct fuel economy testing exclusively in the automatic mode.

We will continue to review semi-automatic transmissions to determine the appropriate modes to use during fuel economy testing. Manufacturers should discuss any new semi-automatic transmissions (this includes any transmission that may be shifted in both an automatic and manual mode) or any other multi-mode transmissions during the certification preview meeting.

If you have any questions on this issue, please contact Mr. Eldert Bontekoe at (734) 214-4442 or your certification representative.

Sincerely,

for Greg Green

Gregory A. Green, Director
Certification and Compliance Division
Office of Transportation and Air Quality